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秦岭造山带和邻域磁异常特征及结晶基底变异分析

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Magnetic anomaly characteristics and crystalline basement variation of the Qinling orogenic belt and its adjacent areas

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摘要

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摘要

本文根据最新的跨越南鄂尔多斯盆地—渭河盆地—秦岭—大巴造山带—四川盆地东北缘, 即榆林—咸阳—万源—涪陵综合地球物理大剖面的高精度地磁观测数据和1: 10万与1: 20万航磁异常资料, 经数据处理和反演分析了该研究区域内地磁异常场展布特征、构造分区及结晶基底起伏. 通过对采集数据的反演与研究结果分析表明, 不同构造单元之间地磁异常场和结晶基底起伏均存在明显差异和分区特征. 南鄂尔多斯盆地磁异常较平稳, 由于燕山运动导致盆地整体抬升, 其后受到了不同程度的剥蚀作用, 结晶基底埋藏较浅; 渭河盆地与四川盆地东北部却长期接受沉积作用, 结晶基底埋藏相对较深; 而秦岭—大巴造山带磁异常变化剧烈, 由于其经历了长期的碰撞、挤压和陆内造山作用, 地层、岩性和构造分布极不均匀, 且在深部存在物质与能量的交换和运移. 这一研究结果为进一步深化认识研究区域内的上地壳属性、构造格局、深层运动学与动力学过程及深部潜在资源远景提供了重要依据.

关键词 鄂尔多斯盆地, 秦岭—大巴造山带, 地磁异常, 结晶基底, 磁源体

Abstract:

According to the latest high precision geomagnetic combine with 1: 100000 and 1: 200000 aeromagnetic data across the Southern Ordos Basin-Weihe Basin-Qinling-Daba orogenic belt-Northeast corner of Sichuan Basin, Scilicet the Yulin-Xianyang-Wanyuan-Fuling combined geophysical profiles, analysed the pattern of magnetic anomaly field, constructed partition and crystalline basement fluctuation characteristics of the study area through data processing and inversion. The result shows that there are obvious differences between different tectonic units. Southern Ordos Basin magnetic anomaly is relatively stable, As it has uplifted and been denudation due to Yanshan movement, crystalline basement is relatively shallow; The Weihe basin and Northeastern of Sichuan Basin have received long-term sedimentation, crystalline basement is relatively deep; The Qinling-Daba orogenic belt magnetic anomaly severe beating, and as it has experienced a long-term collision, estrusion and intracontinental orogenesis, the distribution of stratum and lithology and structure is very unequibrated, interchanging and migration of substance and energy is present in deep. The results provide very important basis for the further understanding of the deep structures and the pattern of the deep kinematic and kinetic processes and deep resource perspective of the study area.

Keywords Ordos basin, Qinling-Daba orogenic belt, Magnetic anomaly, Crystalline basement, Magnetic source

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